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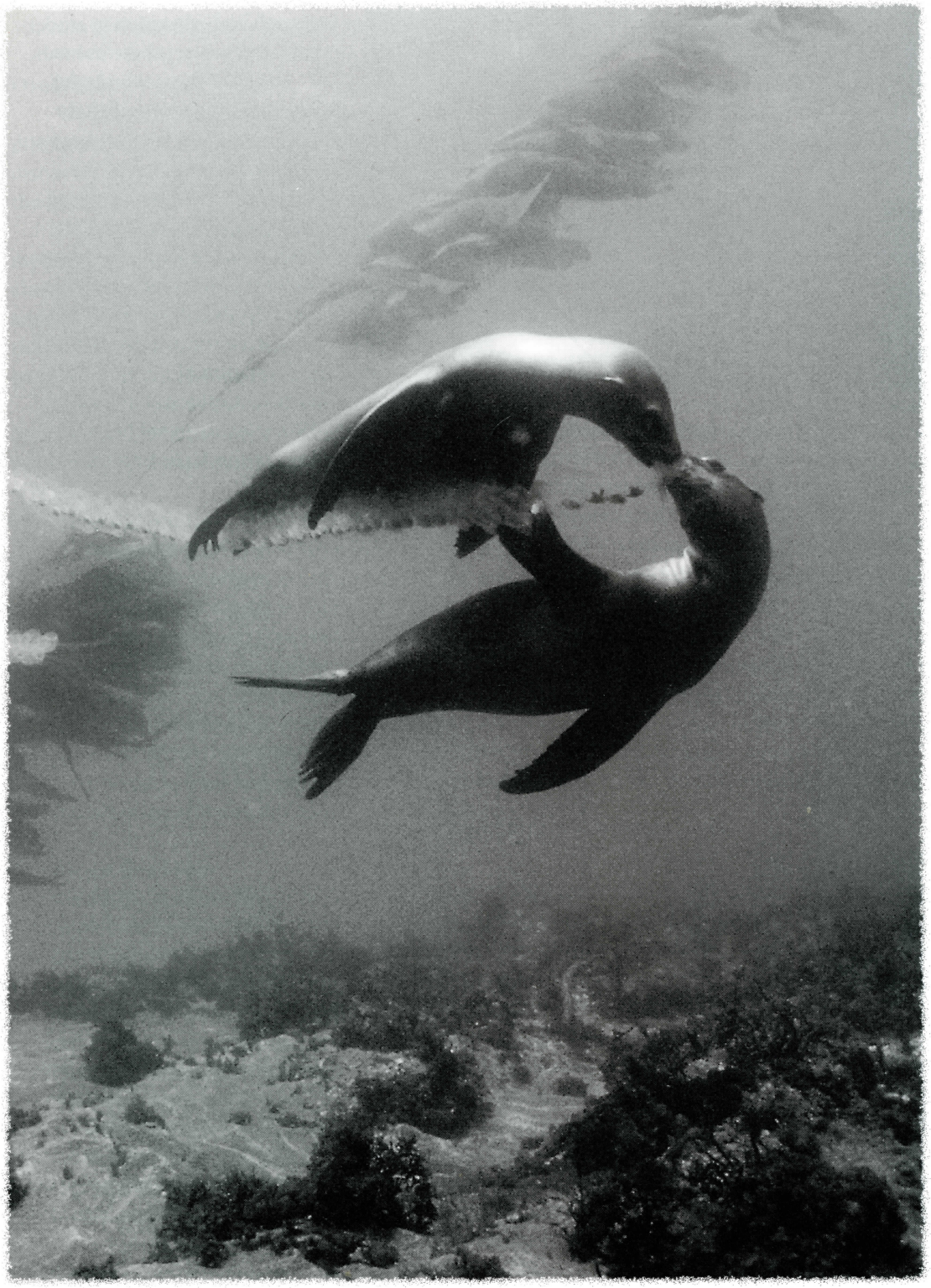
Pinnipeds in CINMS



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Inside

Thirty Years of Pinniped Research at San Miguel Island

By Robert L. DeLong, Ph.D. and Sharon R. Melin

Note: This article is excerpted from a paper presented at the 1999 California Islands Symposium, which will be published in its entirety with citations on CD-ROM by the Santa Barbara Museum of Natural History in Fall 1999.

Overview

We began community ecology and population studies of pinnipeds at San Miguel Island in 1969, following the discovery of a small colony of breeding northern fur seals on the island in 1968.

During the intervening 30 years, the island's six pinniped species have experienced significant population changes. Northern fur seal, California sea lion, harbor seal, and northern elephant seal populations have increased up to threefold. Stellar sea lions have stopped breeding and disappeared, while Guadalupe fur seals occur in small numbers.

Four El Niño events over the 30-year period have provided insights into environmental changes that influence pinniped population dynamics at San Miguel Island.

Northern Fur Seals

Northern fur seals appear firmly established at San Miguel Island, the southern extent of the species' breeding range. Adult females tagged as pups in the Bering Sea and Russian Pacific have been observed here. The species' growth at San Miguel is due to the immigration of females from northern populations. The only severe decreases have occurred as a result of strong El Niño events in 1983 and 1997. The population numbered approximately 12,000 animals in 1997, based upon total pup production of around 3,000 for the two breeding colonies at Castle Rock and Adams Cove.

California Sea Lions

California sea lions breed on four of the Channel Islands (Santa Barbara, San Clemente, San Miguel, and San Nicholas) and haul out on the remaining four islands. San Miguel has the largest breeding population, around 80,000 animals.

Sea lions are the most abundant pinniped on San Miguel, breeding on all beaches of the Point Bennett area and along the south coast from Adams Cove eastward through Tyler Bight. They share pupping and breeding habitat with northern fur seals during June and July.

Even though the population has increased exponentially over the past three decades, there have also been declines due to El Niño events and pup mortality from endoparasites.

Harbor Seals

Harbor seal populations are found on all the Channel Islands. They occur year-round at San Miguel, inhabiting beaches and coves along the island's north and south coasts. These areas are also occupied by northern elephant seals at different times of the year, but are outside most of the California sea lion and northern fur seal breeding and hauling-out areas.

Harbor seals give birth to pups and breed from March-May. The population has increased steadily, stabilizing at around 1,200 animals during the mid-1990s. The reasons for a recent decrease in the population are currently being explored.

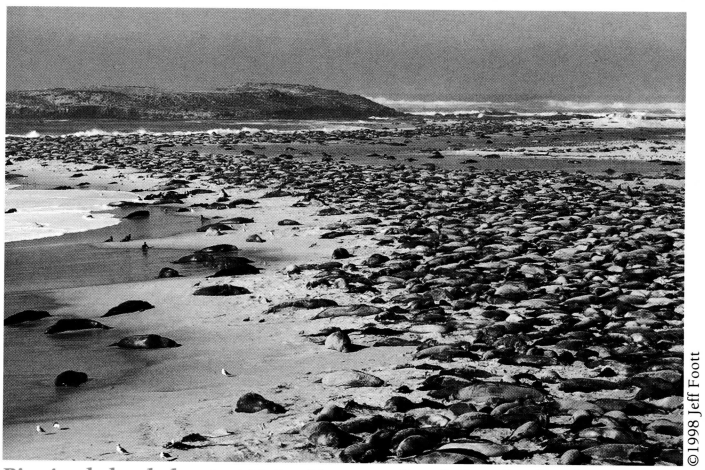
Northern Elephant Seals

Northern elephant seals currently breed on islands from Baja California to the Farallones, and on mainland sites from central California to central Oregon. Unlike other pinnipeds at San Miguel Island, they give birth to pups and breed from December—February. The island is home to the largest breeding population for the species, around 50,000 animals.

Stellar Sea Lions

The last Stellar sea lion pup at San Miguel Island was born in 1981, and the last animal of breeding age was seen ashore in 1983. The disappearance of Stellar sea lions from San Miguel, which was the southern extent of the breeding range, occurred at a time when the species declined throughout its territory—a period which also coincided with increased ocean temperatures along the Pacific coast. Possible reasons for their disappearance include competition

Continued on page 4



Pinnipeds hauled out at Point Bennett, San Miguel Island.

Thirty Years of Pinniped Research

Continued from page 3

with California sea lions for breeding habitat and changes in the marine foraging environment.

Guadalupe Fur Seals

Guadalupe fur seals breed at Isla de Guadalupe and Islas San Benito, and adult males and juveniles haul out on the Channel Islands. At San Miguel Island, one or more adult males have been sighted annually since 1969, and juvenile animals of both sexes have been seen occasionally over the years. The first adult female at San Miguel Island was seen in 1997. In June of that year, she gave birth and, over the next year, reared the pup to weaning age. This was apparently the first Guadalupe fur seal pup born in the Channel Islands in at least 150 years. It is probable that Guadalupe fur seals will continue to establish new breeding colonies, including the Channel Islands.

Community Ecology

We have studied interactions between the six pinniped species on San Miguel Island for food and rookery space. A few published studies give examples of the nature of competition at the community level.

Northern fur seals and California sea lions breed at the same time and actively compete for breeding space, with the result that fur seals displace California sea lions.

California sea lions and northern fur seals have many of the same prey species in their diets, but appear to minimize competition by foraging in different areas.

Northern elephant seals minimize competition with other pinniped species by breeding in a different season, and by dramatically different foraging behavior.

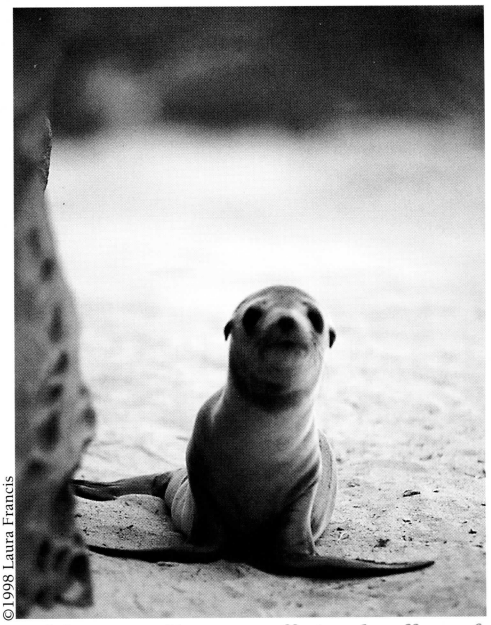
At some times of the year, harbor seals and northern elephant seals use the same beaches for pupping, breeding, or hauling out. It appears that during the elephant seal breeding season, harbor seals may be displaced from some of their preferred beaches.

It is also probable, but not yet well documented, that molting female elephant seals actively displace harbor seals from their preferred pupping beaches, causing a decline in harbor seal numbers.

Impacts of El Niño

El Niño conditions impact fur seals and sea lions by decreasing the food supply, resulting in reduced reproductive rates and survival. Northern elephant seals suffer increased pup mortality caused by flooding of beaches and high surf during storms.

The 1983 El Niño is regarded as the most powerful such event recorded in California. On San Miguel Island, northern fur seal and California sea lion pups declined 60 percent and 30 percent respectively. It took six years for sea lions and eight years for fur seals to reattain pup production levels of 1982.



California sea lion pup suffering the effects of El Niño.

The 1992 El Niño significantly affected only California sea lions, with pup production declining 43 percent. However, the species rebounded quickly, and by 1994 production levels reached record highs.

Onset of the 1997 El Niño came in May, shortly before sea lion and fur seal pupping began. Females of both species became food stressed. Mortality of fur seal pups reached 75 percent, and mortality of sea lion pups exceeded 24 percent. Pup production for both species crashed in 1998; northern fur seals declined 82 percent and sea lions declined 51 percent from 1997 levels.

It is probable that few northern fur seals and greatly reduced numbers of sea lions from the 1998 cohorts will survive. Two years of high pup mortality and one year of extremely low production for both species will change the age distribution of these populations, resulting in slower population growth in the future.

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CINMS Pinniped Haul-out and Breeding Distribution Map

The distributions of the five species of pinnipeds that live and breed on the four northern Channel Islands and Santa Barbara Island are illustrated in a new map now available on the CINMS website. Check out the haul-out and breeding locations for California Sea Lions, Northern Fur Seals, Guadalupe Fur Seals, Elephant Seals and Harbor Seals at **www.cinms.nos.noaa.gov**.